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DONATED BY

John L. Seaman, Esq.

ANNUAL REPORT

OF THE

BOARD OF DIRECTORS

OF THE

Lehigh Valley Rail Road Co.

TO THE

STOCKHOLDERS,

JANUARY 10, 1870.



PHILADELPHIA:

EDWARD N. GRATTAN, PRINTER.

No. 327 CHESTNUT STREET.

1870.

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OFFICERS
OF THE
LEHIGH VALLEY RAILROAD COMPANY,

JANUARY 10, 1870.

President.

ASA PACKER.

Vice-President.

CHARLES HARTSHORNE.

Treasurer.

CHARLES C. LONGSTRETH.

Secretary.

LLOYD CHAMBERLAIN.

General Superintendent and Chief Engineer.

ROBERT H. SAYRE.

Directors.

CHARLES HARTSHORNE,
WILLIAM W. LONGSTRETH,
EDWARD H. TROTTER,
JOHN TAYLOR JOHNSTON,
WILLIAM H. GATZMER,
DAVID THOMAS,

ASHBEL WELCH,
WILLIAM L. CONYNGHAM,
ARIO PARDEE,
EDWARD ROBERTS,
WILLIAM A. INGHAM,
J. GILLINGHAM FELL.

ANNUAL REPORT.

In again presenting their Annual Statement to the Stockholders, the Board have to report a reduction of 210,333 $\frac{11}{100}$ tons, in the total amount of coal carried over the Road below Mauch Chunk, as compared with 1868; although, from the more remunerative prices obtained this season, the amount received for the service is considerably in advance of the receipts for the year before. The total coal traffic of the Road amounted to 2,331,407 tons, including 21,237 tons Bituminous Coal. The particulars of the receipt and distribution of this trade will appear in the Report of the General Superintendent and Engineer.

The receipts from the transportation of coal have increased	\$456,525 72
The receipts from the transportation of passengers and mails have increased	55,141 23
The receipts from the transportation of miscellaneous freights have increased	142,744 41
Total increase from these sources,	\$654,411 36
or 15 $\frac{32}{100}$ per cent.	

It will be observed, that both the freight and passenger business have continued to show a very satisfactory increase; and they will, during the current year, have a large accession from the trade of the Upper Susquehanna Valley and the through Western and Northwestern business, now made available to us by the opening of the Railroad of the Pennsylvania and New York Canal and Railroad Company to its connection with the Erie Railway at Waverly, N. Y. This line was so far completed in September last, as to enable trains to be run

through, and has had more trade offering than they have been able to accommodate with their present equipment. This it is proposed to increase, and to provide the line with the facilities for doing a large business.

The means for the construction of this Road having been furnished by our Company, and their bonds having been all received by us in payment for work done prior to last year, that Company obtained from the Legislature the right to issue a ten per cent. Preferred Stock, which, by agreement with them, we are to receive in payment for our advances. As this Stock was not known on the market, and it was thought desirable that it should be held by us, the Board of Managers directed the issue, *pro rata*, among the Stockholders, of twelve-and-one-half per cent. of Lehigh Valley Stock, at its par value in cash, to replace the capital expended upon the Upper Line. The number of shares to be taken was 40,152, of which 39,843 shares were subscribed for. Of these, 33,115 shares have been paid for in full, and from one to three instalments paid on the remainder. Although the equipment and completion of this Road will require further advances to a considerable amount, yet it is now in a position to add largely to our receipts, both directly and as a feeder to our main line.

In addition to the locomotives and ears built and purchased to replace those worn-out or for other reasons withdrawn from the service, we have increased our rolling-stock, during the past year, by 20 locomotives, 8 first-class passenger ears, 2 baggage and mail ears, 52 eight-wheel house and platform ears, 51 six-wheel platform ears, and 1820 six-ton coal ears; representing, with other new work, in all, an addition to our capital of about One Million Dollars. The length of steel track has been increased about fourteen-and-three-eighths miles, and sixteen miles has been relaid with a guaranteed rail claimed to be far superior to any iron rail heretofore in use.

We have under contract, for delivery early in the present year, 16 first-class locomotives and 1800 coal cars; and under construction, at our own shops, 7 locomotives and 100 eight-wheel flat cars. Contracts have also been made for 1250 tons steel

rails. These purchases will require about one million dollars to be added to our equipment account during the coming year.

The old coupon bonds of the Company, due in 1873, being subject to tax, and also those of the Hazleton Railroad Company, continue to be presented for conversion into the Registered Bonds of 1868, which are free from State and United States taxes.

At the end of our fiscal year (November 30th, 1869), our capital account stood as follows:

Preferred and Common Stock, 354,328 shares, .	\$17,716,400 00
Scip, not fully paid,	83,375 00
Old Bonds outstanding,	1,090,000 00
Bonds of the Hazleton R. R. Co. outstanding, .	134,500 00
New Bonds, Coupon and Registered, . . .	3,350,000 00
Floating Debt,	897,689 25
Total,	<u>\$23,271,964 25</u>

Since that date, we have received and converted \$14,000 of the old bonds and \$2,500 of Hazleton bonds.

The Board have continued the policy approved by the Stockholders at the last Annual Meeting, of securing a proportion of the coal trade from each region, by the purchase of interests in other Companies owning lands on or near our several branches. The value of such property now held by us, including our investment in the Pennsylvania and New York Canal and Railroad Company, is estimated at more than sufficient, if sold, to pay off our bonded and floating debt, leaving the Road with all its Branches and the Hazleton coal lands clear to the Stockholders. It is our firm conviction, however, that the future prosperity of the Company will be better insured by a judicious increase of such expenditures.

The receipts from all sources for the year were .	\$5,199,439 85
The expenses of conducting the business, . . .	<u>2,821,050 37</u>

Leaving for net income, applicable to dividends,
interest, State and United States taxes, &c., \$2,378,389 48

Out of this, the usual quarterly dividends of $2\frac{1}{2}$ per cent. each have been paid on the stock outstanding at the several dates.

No change has taken place among the General Officers of the Company since the last Report.

On behalf of the Stockholders, the Board have accepted the provisions of a General Act of Assembly, entitled "An Act authorizing an increase in the number of Directors or Managers of Railroad Companies, and to give Stockholders the power to locate the General Office of such Companies," (approved by the Governor, March 17, 1869.)

The accompanying Report of the General Superintendent and Chief Engineer will show in detail the work of the past year, and the present condition of the property of the Company.

By order of the Board,

ASA PACKER,

President.

OFFICE OF THE SUP'T AND ENG'R L. V. R. R. Co.,
BETHLEHEM, PA., Nov. 30th, 1869.

HON. ASA PACKER,

President L. V. R. R. Co.

DEAR SIR: The following report of the business of the Lehigh Valley Railroad for the fiscal year ending November 30th, 1869, is respectfully submitted:

The total amount of coal transported over the main line and branches, was 2,310,170^s/₂₀ tons.

This was derived from the following sources:

FROM	1868.	1869.	Increase and Decrease.
Wyoming Region,	288,137	450,355	162,218
Hazleton Region,	1,252,638	913,623	*339,015
Upper Lehigh Region,	38,307	8,581	*29,726
Beaver Meadow Region,	554,270	504,796	*49,474
Mahanoy Region,	469,751	431,988	*37,763
Mauch Chunk Region, . . . .	...	827	827
Total,	2,603,103	2,310,170	*292,933

And was delivered as follows:

WHERE DELIVERED.	1868.	1869.	Increase and Decrease.
At L. & B. Junct. to Pa. & N. Y. R. R., . . . .	...	7,398	7,398
At Mt. Carmel to N. C. R. W., . . . .	...	2,517	2,517
At P. H. J. to L. & S. R. R. for canal,	202,482	121,315	*81,167
" " " " " rail,	25,928	4,562	*21,366
At Mauch Chunk for canal,	116,161	101,003	*15,158
At and above M. Chunk for use of Co.,	29,933	44,051	14,118
On line of road above Mauch Chunk,	2,101	8,623	6,522
At Mauch Chunk,	868	965	97
At Packerton to L. & S. R. R. for rail, . . . .	...	4,440	4,440
On line of road below Mauch Chunk,	613,161	574,750	*38,411
" " " " for use of R. R. Co.,	38,266	35,736	*2,530
To Cata. and Foglesville R. R.,	7,460	5,343	*2,117
" East Penna. R. R.,	12,205	10,219	*1,986
" North Penna. R. R.,	173,625	191,891	18,266
" Morris Canal,	101,555	127,436	25,881
" C. R. R. of N. J.,	746,491	530,664	*215,827
" Bel. Del. R. R.,	267,651	328,905	61,254
" Morris and Essex R. R.,	265,216	210,352	*54,864
Total by canal,	318,642	222,318	*96,325
Total by rail,	2,284,461	2,087,852	*196,608
Grand Total,	2,603,103	2,310,170	*292,933

* Decrease.

TONS CARRIED ONE MILE.

	1868.	1869.	Increase and Decrease.
Above Mauch Chunk—			
From Wyoming Region, . . .	14,866,017	23,779,829	8,913,812
“ Hazleton Region, . . .	20,450,956	20,137,327	*313,629
“ Beaver Meadow Region, .	12,365,198	11,552,831	*812,366
“ Mahanoy Region, . . .	17,618,252	15,406,579	*2,211,673
Total above Mauch Chunk,	65,300,423	70,876,566	5,576,143
Total below Mauch Chunk,	88,595,282	79,933,743	*8,661,539
Grand Total,	153,895,705	150,810,309	*3,085,396

During the same period there were transported 763,192 passengers, equal to 12,462,949 carried one mile; being an increase over the previous year of 74,733 $\frac{1}{2}$, equal to 1,330,276 carried one mile.

Miscellaneous freight transported amounted to 1,276,455 $\frac{28}{100}$ tons, equal to 35,803,782 $\frac{23}{100}$ tons one mile; being an increase over the previous year of 136,238 $\frac{78}{100}$ tons, equal to 7,391,405 $\frac{94}{100}$ tons one mile.

Compared with last year, the receipts from coal show an increase of \$456,525.72 or 14 $\frac{69}{100}$ per cent.; from freight, an increase of \$142,744.41 or 18 $\frac{43}{100}$ per cent.; from passengers, an increase of \$55,141.23 or 14 $\frac{21}{100}$ per cent.: total increase of receipts, \$654,411.36 or 15 $\frac{32}{100}$ per cent.

The following is a statement of receipts from all sources, and the ordinary running expenses:

	Gross Receipts.	Expenses.	Net Receipts.
Coal,	\$3,564,822.21	\$1,965,399.19	\$1,599,423.02
Freight,	917,210.76	561,669.58	355,541.18
Pass. express and mail, . .	443,028.09	293,981.60	149,046.49
Total,	\$4,925,061.06	\$2,821,050.37	\$2,104,010.69

* Decrease.

There have been charged to expenses the following items, a considerable portion of which might with propriety have been charged to permanent accounts :

New iron and steel rails,	\$287,775.43
New rail joints,	9,126.11
New track,	7,375.35
Filling Hickory Run trestling,	2,285.27
Stone viaduct at Hay's Creek to replace wooden bridge,	4,143.59
Stone viaduct at Mud Run to replace wooden bridge (not yet completed),	5,515.61
Iron Bridge at Slatington to replace wooden one carried away by freshet,	4,580.05
Shops at Hazleton, Weatherly, Delano, Packerton, and South Easton,	46,121.52
Shop equipment (new tools, &c.),	28,444.36
New coal, freight, and passenger cars,	128,349.57
	<hr/>
	\$523,716.86

There was charged to construction as follows :

For new track L. V. R. R.,	\$4,729.64
“ “ Wyoming division,	5,400.03
“ “ Beaver Meadow division,	2,287.68
“ “ Mahanoy division,	109,575.09
“ “ Hazleton division,	2,798.44
For new dwellings L. V. R. R.,	1,540.30
“ “ Wyoming division,	7,345.53
“ “ Beaver Meadow division,	133.30
“ “ Mahanoy division,	1,348.48
For rock cut at Easton,	9,659.50
“ house and lot at Allentown,	4,500.00
“ depot at Delano,	4,733.56
“ connection with Bel. Del. R. R.,	10,500.00
“ Slatington Branch,	21,829.06
	<hr/>
	\$186,380.61

There are now in use, including all divisions of the road, 72.55 miles of double track, and 127.29 miles of single track ; in addition to which there are 24.52 miles of double track laid, but used as sidings, and 101.02 miles of sidings ; making the total length of track laid 397.93 miles, an increase from last year of 15.29 miles. There are also on the main line 8.24 miles of grading completed and ready for track.

The following materials were used for repairs and construction:

REPAIRS.	Steel Rails.	Switch Frames.	Frogs.	Cross-Ties.	Iron Rails.	Chairs & Splices.	Kegs of Spikes.
Eastern Division, . . .	5122	12	35	39,044	5,038	10,214	215
Wyoming Division, . .	55	3	5	7,991	2,828	1,468	52
Hazleton Division, . .	—	8	40	17,877	1,295	435	60
Beaver Meadow Division,	—	1	14	20,921	3,990	2,475	166
Mahanoy Division, . .	—	1	16	14,096	1,860	1,409	131
Total, . . .	5177	25	110	99,929	14,751	16,001	624

CONSTRUCTION.

Eastern Division, . . .	—	11	25	5,597	385	385	39
Wyoming Division, . .	—	5	7	2,534	338	338	34
Hazleton Division, . .	—	8	14	2,904	387	387	39
Beaver Meadow Division,	—	4	6	766	102	102	10
Mahanoy Division, . .	—	5	8	25,796	3,809	3,809	428
Total, . . .		33	60	37,597	5,021	5,021	550
Grand Total, .		33	60	137,526	19,772	21,022	1174

SIDINGS GRADED AND NOT LAID.

	Miles.
Eastern Division,	0.81
Wyoming Division,	7.43
Hazleton Division,	—
Beaver Meadow Division,	0.33
Mahanoy Division,	—
Total,	8.57

The widening of the Rock Cut, at Easton, has been completed. The dangerous cut, north of Lizard Creek, is being widened for an additional track, and the stone used for masonry at various points where it is needed. The road purchased last year, from the Spring Mountain Coal Company, has been extended westward to a connection with the Yorktown road, and some grading done on the new connection with the German Pennsylvania Coal Company; but that Company objecting to the manner of connection, it has been left unfinished.

The excavation through the town of White Haven has been widened for a second track, and a heavy retaining wall built to support the lots on west side of railroad.

Very little has been done toward filling the trestle-work above White Haven. This piece of work should not longer be delayed.

The Old Bridge, at Switch-Back, is nearly fitted up, and we shall soon have the embankment complete across that place.

Tracks, 2867 feet in length, have been built to and under Laurel Hill Breaker, and 4343 feet in length to and under the Breaker at South Sugar-Loaf Colliery, on Hazleton Branch.

The work on the branch road from Slatington to Slatedale was commenced in April, and a large portion of the grading and bridging is completed. The track has been laid to the distance of a mile, and is being extended, and the part laid is now in use for transportation of slate and miscellaneous freight.

On the fourth day of October last, a flood occurred on the Lehigh, in which the river rose from 20 to 22 feet, submerging the road in many places, and rising, for a considerable portion of the distance between Mauch Chunk and Easton, nearly to the level of the track. At various points between Bridgeport and Easton this rise of water caused serious damage to the graduation, and considerable damage to the masonry, the principal part of which may be detailed as follows:

At Hay's Creek, part of the foundation-wall of the arch culvert was undermined.

At Hickory Run and at Mud Run the embankments were considerably washed. The lower wing-walls of the masonry at crossings of Drake's Creek and Stony Creek were in part carried away, and the upper abutment at Drake's Creek badly undermined.

At the Lehigh River bridge, at Penn Haven Junction, the eastern abutment was undermined, and the abutment cracked in consequence. At the Turn-Hole, the old timber bridge was washed away and the iron bridge somewhat in-

jured. The new arched bridge, of three spans, over the Mahoning Creek, near Lehighton, was in progress and the arches resting on the centres. These were swept away and the abutments and piers badly injured. More water way had been provided in the new bridge than in the old; but the freshet has demonstrated the advisability of adding another span, which will be done when work is resumed upon it in the spring.

Between Mauch Chunk and Easton, the embankments were seriously injured at various points; in many places the up-track was carried away and in many others undermined so that it was impassable.

Above Biery's bridge, both tracks were undermined and a large amount of embankment washed out. The damage here was caused, in part, by the deposit of a heavy bank of furnace slag on the opposite side of the river, by the Crane Iron Company. Twice before, our road has been injured from the same cause, and, to prevent damage in future, we have commenced the erection of a substantial stone wall, which will be completed as soon as practicable. At Kuntz's Dam and at the Bethlehem Rolling Mill, the embankment and both tracks were washed out for a short distance.

At Mauch Chunk, the Road Bridge, between the Mansion House and our depot, was carried away, and we have since had no communication with Mauch Chunk Borough, except over the bridge at East Mauch Chunk.

Repairs were so far completed as to enable us to run trains over the down-track on the following day; but the repairs to the up-track were not fully completed until November 1st, although a considerable force was constantly employed, the entire cost of which was charged to expenses.

LOCOMOTIVES.

There were on the road, at date of last report, 76 locomotives furnished with steel tyres. This number has been increased during the year as follows:

Iron tyre replaced by steel on 12 engines.

Steel tyre put on 20 new engines built and purchased during the year.

Total number of locomotives with steel tyres, November 30th, 1869, 108.

The steel tyres of engine Easton, No. 25, put on in December, 1863, have made 114,075 miles, and are still good, although they have been turned off three times. All new engines purchased or built are furnished with steel tyres and steel fire-boxes.

RAILS.

Another year's experience of Bessemer steel and steel-headed rails has but strengthened my conviction of their superiority for all roads of heavy traffic. Those laid in 1864 are looking well, and will, undoubtedly, last until 1874 at least. We have laid nearly 1300 tons additional the past year; mainly between Easton and Manch Chunk. A few were laid on the Weatherly grade, and 820 feet track laid with them at Newport Station, on the Wilkesbarre Mountain. We now have in use 18.38 miles of track laid with Bessemer steel principally; the exception is about five-eighths of a mile, laid with steel-headed rails, which a year's wear has made no more impression upon than on the all-steel, except in three or four, which have shown defects in welding. A part of these rails are from the establishment of Funck & Elbers, Prussia, and a part from Waterman & Beaver, Danville, Pennsylvania.

We have also a few rails, made at Bethlehem, which have had over a year's service and are looking remarkably well; the heads of these last rails are a combination of iron and steel, so arranged as to give about two-thirds of the wearing surface of steel; they can be furnished at about \$15 per ton above the cost of good iron rails. I am prepared to recommend their use in place of iron, so soon as the Bethlehem Iron Company are prepared to manufacture them in quantity.

We have also purchased, and laid during the year in our main track, 523 tons of Abadare iron rails, guaranteed to

last five years, and 1007 tons of Guest & Co. iron rails, guaranteed to last seven years.

We have also under contract, for next spring delivery, 1000 tons of Bessemer steel rails, from the establishment of Guest & Co., and 250 tons from the Pennsylvania Steel Company, Harrisburg. In order to obtain and maintain a smooth, permanent track, a good joint is indispensable. This, I think, we have attained in the form of fish-bars adopted. All our steel rails laid this year have been with the joint or splice referred to.

EQUIPMENT.

Our Equipment has been increased and decreased during the year, as follows :

ENGINES.

Purchased in 1869,	17
Built by L. V. R. R. Co.,	5
	<hr/> 22
Less put out of service,	3
	<hr/> 19 Increase.

PASSENGER CARS.

Purchased in 1869,	8 Increase.
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BAGGAGE AND EXPRESS CARS.

Built in 1869,	2 Increase.
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HOUSE CARS.

Built in 1869,	2 Increase.
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EIGHT-WHEEL PLATFORM CARS.

Not before reported,	1
Built in 1869,	50
	<hr/> 51 Increase.

SIX-WHEEL PLATFORM CARS.

Purchased in 1869,	50
Built " "	1
	<hr/> 51 Increase.

WRECK AND TOOL CARS.

Built in 1869,	1 Increase.
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GRAVEL CARS.

Sent to Pa. & N. Y. C. & E. R. Co., 19 Decrease.

COAL CARS.

Built at Paekerton, 436
 " " Hazleton, 36
 Purchased in 1869, 500
 Purchased from Hazleton R. R. Trustees, 1000

1972

Less vacant numbers to be rebuilt, 152

1820 Increase.

Our Equipment is now as follows :

Engines of all classes, 136
 Passenger cars (25 first-class and 5 second-class), . . 30
 Baggage and Express cars, 13
 House cars, 8
 Eight-Wheel Platform cars, 368
 Six-Wheel Platform cars, 51
 Four-Wheel Platform cars, 12
 Wreck and Tool cars, 7
 Gravel cars, 21
 Lime cars, 20
 Coal cars, (rated as 4 wheels,) 10,904

The number of engines given above includes several which are not relied on for general service, and one (Colorado) entirely out of service.

We have completed during the year, at our own shops, three freight and two passenger engines, and have in process of construction, at South Easton, Weatherly, Delano and Hazleton shops, seven engines, which we expect to complete during the year.

We have also purchased during the year, from M. Baird & Co., fifteen, and from Mason Manufacturing Company, two. We have now under contract, with M. Baird & Co., six, and with Mason Manufacturing Company, ten; all heavy engines.

BUILDINGS.

The following buildings, commenced last year, have been completed :

The water station at South Easton ; the depot at Freemansburg ; the water station at Rockdale ; the smith-shops and shop-office at Packerton, and the shops at Weatherly.

The following new structures have been erected :

A dwelling-house for track foreman, at Catasaqua ; an extension of the frame engine-house at East Mauch Chunk ; two dwelling-houses at Fairview, and three at Sugar Notch ; a small water tank at Linder's Run. A coaling station has been built at Sugar Notch.

At Weatherly, a frame building, 18 by 36 feet, two-story, for shop-office, store-room, and telegraph office. An addition to passenger and freight depot, at Beaver Meadow, 18 by 20 ft.

At Jeansville, a new passenger and freight depot has been commenced, but is still unfinished.

At Delano, a new depot with boarding-house attached, and one double house, built.

A coaling station has been built at the lumber yard on Hazleton Division.

At Hazleton shops a new foundry building of stone, 50 by 100 feet, commenced.

BRIDGES.

The second track has been built on trestle-work through the race, at the cotton factory at South Easton. This makes our double track continuous at that point.

The old stringer bridge, No. 7, at Bethlehem depot, has been replaced by an iron girder bridge.

The new iron bridge, of three tracks, across Trout Creek, at Slatington, has been completed.

The stone viaduct across Mahoning Creek has been commenced. The stone arch over Hay's Creek has been com-

pleted. The abutments have been built for an arch culvert across Mud Run. All the small bridges between Black Creek Junction and Quakake have been widened for an additional track.

PENNSYLVANIA AND NEW YORK CANAL AND RAILROAD COMPANY.

At the date of last report, the road of the Pennsylvania and New York Canal and Railroad Company was being operated by our Company from Wilkesbarre to Tunkhannock. We continued to operate the same, and opened it to Lacyville on July 26th. On August 25th, the engine Reliance, with Directors' car, containing several of the Directors of the Lehigh Valley and of the Pennsylvania and New York Canal and Railroad Company, went through to Waverly.

On September 20th, the road was opened for business, when we ceased to operate it, except that portion from Wilkesbarre to Lackawanna and Bloomsburg Junction. The main line of road, from Northampton Street, Wilkesbarre, to Waverly, is 105 miles, with a branch to Mineral Spring Colliery one mile in length, and short branches connecting with other collieries; also, a branch $1\frac{1}{2}$ miles long connecting with the Barclay Railroad. These branches, together with the sidings for passing trains and stand-room for cars, amount in the aggregate to $13\frac{3}{4}$ miles of track; in addition to which there is laid a third rail on each of the Erie tracks, making a narrow gauge for our cars to pass from point of connection with the Erie to their freight and passenger house, a distance of about three thousand feet.

The opening of this important line of railroad was hailed with evident satisfaction by the people of the northern portion of our own State, and by the citizens of Southern and Western New York, who have long looked with eager anxiety for the completion of a railroad from the anthracite coal-field of Wyoming to their homes, by the only route that nature has

provided, on which a single locomotive, leaving the mines in the morning with a train of 500 tons of anthracite, may, within twelve hours, deposit it upon the Erie Railway at Waverly, from whence it may be distributed by that and other avenues of transportation built and building throughout the State. This is no longer a question to be solved—it has been accomplished. The average grade going North is two-and-a-half feet per mile, and the maximum encountered is but fifteen feet per mile; which may be reduced to ten feet or even less, by a moderate expenditure of money.

The track being laid in great part upon the towing-path, we have a well-settled permanent track to begin with. The alignment is not at all points so good as is desirable; but this objection can be gradually overcome by filling out. The curves, however, are generally of so great radius as not to interfere in any degree with the speed or weight of trains. At several exposed points, considerable work is required in widening, raising and protecting the banks from the river. This is being done and will be prosecuted gradually to completion.

In order to avoid steep mountain sides of yielding, sliding materials and other obstacles, as well as to cheapen construction, the road crosses and re-crosses the canal ten times on permanent bridges; except in two cases, when it crosses on swing or pivot bridges. It also crosses the Susquehanna River once, at Towanda, on a fine bridge of nine spans, in all 1485 feet long, and the Chemung river once, at Athens, on a bridge 528 feet long; it also crosses a number of streams, some of which are quite large. There are in all twenty-two truss bridges, fourteen girder bridges, and two pivot bridges; total length of bridging, 5882 feet. These structures are all first-class wooden bridges, except one span of iron at Towanda. The castings and forgings for almost the entire work were made at the shops of your Company, at South Easton.

During the year, good and substantial station-houses have been built at Tunkhannock, Meshoppen, Laceyville, Wyalus-ing, Wysauking and Milan, and are being built at Mehoo-

pany, Skinners' Eddy, Towanda and Athens. There was built, in connection with the Erie Railway Co., a set of pockets at Waverly, for the transfer of anthracite coal from our own to the broad-gauge cars of the Erie road. They were so far completed as to permit the transfer of a limited amount of coal about the middle of October.

The pockets are not yet quite finished, but when done will have a capacity of from 1000 to 1200 tons per day. There has also been built, in connection with the Erie Company, a covered platform for the convenient transfer of miscellaneous freight, and elevated tracks have been arranged for the expeditious transfer of grain in bulk.

The late opening of the road and inadequate terminal facilities and equipment, has prevented a full development of its business; but sufficient has been done in October and November to justify the belief that the sanguine expectations of the projectors and promoters of the enterprise will be realized. The number of important lines of road being built, and of others projected, with a reasonable prospect of being pushed to completion, shows the importance attached by the public to the completion of a good line of road from the anthracite coal-field to the North and West.

The Southern Central Railroad is designed to connect our road at Waverly with Lake Ontario, 118 miles, via Owego, Auburn and Weedsport. At Auburn, it will cross and connect with the New York Central Railroad. At Weedsport, it will cross the Erie Canal, also the main line of the New York Central Railroad. The part of the road between Owego and Auburn is all graded and most of it laid, and trains are running upon it the first thirty miles from Owego, north.

The Ithaca and Towanda Railroad Company put their line under contract in the summer, and considerable progress has been made in the grading. This road will connect our road at Waverly with the town of Ithaca (at the head of Cayuga Lake) and the Erie Canal, via Cayuga Lake. The distance from Waverly to Ithaca is but thirty-six miles. The ruling grade going North is only 21 feet per mile, and the alignment

is remarkably good; this line can be completed next summer, and I learn it is the intention of the Directors to push the work vigorously.

Other lines are projected: one from Waverly, via Trumansburg and Seneca Falls, to Big Sodus Bay. Another from Athens to Elmira, and thence to Watkins at the head of Seneca Lake.

The Erie and Sullivan Railroad, connecting a deposit of coal in Sullivan County with our road at Towanda, is well advanced; the graduation, masonry and bridging is nearly completed, and considerable progress has been made in laying track. I am under the impression that the coal deposit is valuable. Our road will form the outlet for it from Towanda, North. Surveys have been made to connect Montrose with our road, either at Meshoppen or Tunkhannock; either route is practicable—length of road from twenty-two to twenty-five miles.

The very limited facilities for transferring coal to Lake vessels from any of the railroads entering Buffalo, made it necessary to make such provision as would guard the interest of our line in that direction. To do this we have subscribed to $\frac{3}{4}$ of the stock of the Buffalo Creek Railroad Company, and commenced the work of construction. The road named will be about $3\frac{1}{2}$ miles long, and will connect all the railroads entering Buffalo (except the Niagara Falls Railroad) with the harbor at a convenient point for the erection of wharves and other facilities for the transfer of coal and other commodities from cars to vessels, or vessels to cars.

The right of way for most of this road has been secured and one mile of the grading completed. The foundations for the abutments at crossing of Buffalo creek are ready for the masonry. It is designed to complete it as early in the spring as practicable, from a connection with the Erie Railway to the harbor; so that coal destined for Chicago and other Lake ports may go forward from our line. *E H t*

Early in the year, complete surveys were made and a line of road located from our present terminus below Mt. Carmel

down the valleys of the Shamokin creek and Coal Run, with maximum grade of 66 feet per mile, seven and one-half miles to Shamokin; thence up Carbon Run, with similar grade, five and one-half miles, to Zerbe Run Summit; thence down Zerbe Run, at a maximum grade of 95 feet, two miles, to the improvements on the Trevorton property. Throughout its entire length, this line lies in the centre of a magnificent, and, to a great degree, unimproved coal-field. The grading of this line, except in the vicinity of Shamokin, will be quite light.

During the summer a line of road was located to our coal lands, back of Pittston. This line left the road of the Pennsylvania and New York Canal and Railroad Company, at the foot of Campbell's Ledge, running through the property of John Everhart, crossing the Lackawanna above Feeder Dam, thence to a desirable point for opening.

I propose to have examinations made during the winter, with a view of extending this line to a connection with our main road at Fairview. If this route is found to be practicable, it will effect a saving of from ten to twelve miles in distance over our present route, via Wilkesbarre, for all freight and passengers to and from the upper road, and about the same on Pittston coal going East. The increasing trade of the Pennsylvania and New York Canal and Railroad Company, together with the increased amount of coal offered for transportation to Eastern markets, makes it necessary to provide additional road facilities to the summit of Wilkesbarre mountain. Three plans present themselves; but surveys and estimates will have to be made before I am prepared to recommend which of the three to adopt.

One is by double-tracking our present line. This would require the least outlay and be least useful.

Another is to surmount the mountain by a system of inclined planes, similar to those of the Lehigh Coal and Navigation Company, which they claim enables them to raise coal from the valley at a marvellously low figure.

Mr. G. W. SNYDER (who I learn designed and built the machinery for the planes just mentioned) has given me an

approximate estimate of the cost of necessary machinery, which leads me to say that this plan will involve an expense of between five and six hundred thousand dollars.

The third plan is to build the line before spoken of, from Campbell's Ledge to Fairview. This plan, in addition to shortening the distance, will develop a valuable coal territory that is now to a great extent unimproved.

In my opinion, active measures should be instituted, looking to the development of the coal lands owned or controlled by this Company.

Very respectfully, yours,

ROBT. H. SAYRE,

Superintendent and Engineer.